A Comparative Study of the Standard Prenatal Care in Nicaragua to Standard United States Prenatal Care

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Abstract

OBJECTIVE: To determine the efficacy and cost effectiveness of the standard prenatal care offered in Nicaragua and the United States. METHODS: In a comparative study of standard prenatal care in Nicaragua with the prenatal care in the U.S., the number of appointments, the types of tests/screenings, the frequency of tests/screenings, and the maternal and neonatal mortality rates were compared. Data concerning prenatal care was collected from a U.S. obstetric gynecologist and a Nicaraguan government nurse and doctor in the respective countries. The mortality rates used were provided by The World Bank[1,2]. RESULTS TO DATE: Standard prenatal care in Nicaragua recommended fewer appointments for pregnant mothers than U.S. standard care. Due to the different living conditions, there are some differences in tests/screenings performed in each country. Overall, the U.S. performs more screenings on mothers. CONCLUSIONS: Many unaccounted factors have interfered with the ability to make concrete conclusions about the efficacy and cost effectiveness of standard prenatal care in Nicaragua and the U.S. relative to one another.

Introduction

I spent eight weeks in Las Salinas, Nicaragua working through the Foundation of International Medical Relief for Children (FIMRC), working at a government health clinic. My primary goal, was to learn about the prenatal healthcare available to women in Las Salinas and in the United States, and through a comparison of the two systems, find ways to improve each one. Before leaving for Nicaragua, I met with Dr. Michelle Metz, an obstetrician at the George Washington Hospital, to learn about the standard prenatal care available for expecting mothers in this country. While in Las Salinas, I assisted during the prenatal appointments, measuring the uterine height, taking and recording patients' weight statistics, and detected the fetal heartbeat. In addition to conducting my study, I assisted the government clinic staff in primary care. I looked up treatment guidelines and evidence-based medicine, took patient histories, performed physical exams, administered medications and vaccinations, cleaned wounds, and aided in suturing. I also helped out next door in the FIMRC clinic when the pediatrician was present to see patient, finding patient files, recording the patients' height, weight and vitals, and distributing medications from the pharmacy. I also participated in the educational "charlas." Twice a week, FIMRC visited the town's school to give mini-health lectures on various topics. I was an educator, and to prepare for these "charlas," I prepared posters, diagrams, and games.

Right: Government health clinic
Below: Charla about dental hygiene

Materials and Methods

The number of appointments, the types of tests/screenings, the frequency of tests/screenings, and the maternal and neonatal mortality rates were compared. Data concerning prenatal care was collected from a U.S. obstetric gynecologist and a Nicaraguan government nurse and doctor in the respective countries. Prenatal appointments were observed in the government clinic in Las Salinas, Nicaragua to determine the adherence of provided healthcare to the stated standard by the Ministerio de Salud (MINSA), the ministry of health. Time did not allow similar observation at the George Washington Hospital. The mortality rates used were provided by The World Bank[1,2].

Results

Table 1.

Trimester	Visit #	Timeline	Purpose
Performed at every visit			Fill out clinical perinatal history, perinatal card/form, and other records Determine social factors (violence, poverty, lack of family or partner support) Classify pregnancy as high or low risk Record maternal vitals and weight General physical exam Urine analysis (leukocytes and nitrite) Obstetric Exam (measure uterine height, fetus cardiac frequency, position and presentation of fetus) Calculate gestation age Give iron and folic acid supplements Consult patient on signs, symptoms of danger during pregnancy Counsel patient on breastfeeding and family planning
1st	1	Before 12 weeks	Tetanus vaccine (booster dose or first dose) HIV Testing and give information about HIV Determine glucose fasting level Test for syphilis and provide information regarding the disease Blood typing and Rh factor determination
2nd	2	16-18 weeks	Routine
	3	22-24 weeks	Second dose of tetanus vaccine (where applicable) Give iron and folic acid supplements Single dose of Albendazol 400 mg PO (antiparasite) PO 2g of Calcium daily starting at 20 weeks PO Aspirin 81 mg, daily starting at 20 weeks if at risk of preeclampsia/eclampsia
3rd	4	28-30 weeks	HIV test and give information about HIV Second dose of tetanus vaccine (where applicable) Determine glucose fasting level Test for syphilis (RPR) and provide information about it PO 2g of Calcium daily starting at 20 weeks PO Aspirin 81 mg, daily starting at 20 weeks if at risk of preeclampsia/eclampsia
	5	34-36 weeks	PO 2g of Calcium daily starting at 20 weeks PO Aspirin 81 mg, daily starting at 20 weeks if at risk of preeclampsia/eclampsia Instruct about delivery and plan delivery Screen for Group B Streptococcus
	6	40 weeks	PO 2g of Calcium daily starting at 20 weeks PO Aspirin 81 mg, daily starting at 20 weeks if at risk of preeclampsia/eclampsia Instruct about delivery and plan delivery Examine pelvic presentation and the transverse situation of the fetus

Table 2.

Trimester	Visit #	Timeline	Purpose
1st	1	6-8 weeks gestation	Thorough physical exam and review of medical history Receive an estimation of due date Ultrasound Blood work: CBC test, rubella immunity, RPR (syphilis) screen, HIV test, gonorrhea/chlamydia cultures (swab in the vagina), hemoglobin electrophoresis, cystic fibrosis for carrier, Pap smear (unless just had a recent one)
	2	10-12 weeks	Blood pressure, weight, and urine test for protein and glucose Down syndrome – NT/STF
2nd	3	14-16 weeks	Listen for fetal heart tones Alpha-feto protein (AFP) screen – spina bifida Cervical cerclage if needed (if threat of incompetent cervix)
	4	18-20 weeks	Anatomy scan – check development, spinal column
3rd	5	24 weeks	Serial fundal height measurements (the height in centimeters match the fetus's gestational age in weeks within 4 cm) to determine fetal growth Discrepancy of more than 4 cm – more examination
	6	26 weeks	Glucose Challenge Test (glucola screen) – gestational diabetes
	7	28 weeks (every 3 weeks after this)	CDC test (human dilution → anemia, protective), Iron supplement Group beta vaginal strep test (culture), swab in the vagina and rectum to determine if there is a need for penicillin during labor
	8	32 weeks	Determine fetal position
	9	36 weeks (every week after this)	Group beta strep test, swab in the vagina and rectum to determine if there is a need for penicillin during labor
	10	37-38 weeks	Weekly Cervical exam – dilations
	11	38-39 weeks	Leopold – make sure the baby's head is down

Table 1, Nicaraguan Government Health Clinic prenatal schedule. Table 2, George Washington University Medical Faculty Association (MFA) prenatal schedule.

Figure 1.

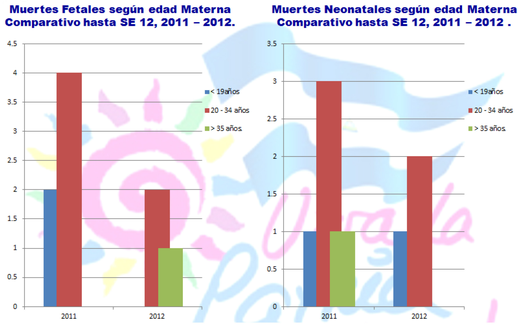
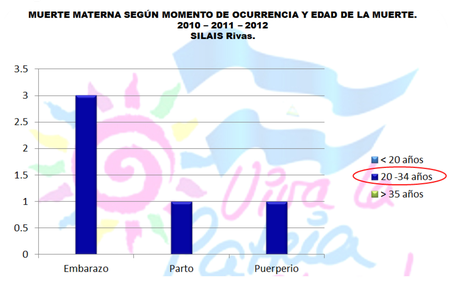


Figure 2.



The maternal mortality rate reported by The World Bank For the U.S. and Nicaragua in 2011 are 21 and 95 per 100,000 live births respectively. The neonatal mortality rate reported for 2011 is 8 and 26 per 1,000 live births respectively.

Figure 1, on the left, fetal mortalities in the district of Tola, which includes the community of Las Salinas, is categorized by maternal age. On the right, neonatal death in Tola is categorized by maternal age as well. Figure 2, maternal mortalities in Tola in relation to different stages of pregnancy (pregnancy, delivery, and post-partum).

Conclusion

Standard prenatal care in Nicaragua recommended fewer appointments for pregnant mothers than U.S. standard care. In March 2012, the Nicaraguan government implemented a reduction of the recommended appointments from nine to six, whereas in the U.S., standard care provides mothers with at least 11 visits. Additionally, due to the different living conditions, there are some differences in tests/screenings performed in each country, and overall, the U.S. performs more screenings on mothers. For example, in Nicaragua, it is standard to screen expectant mothers for *Toxoplasmosis* due to general inadequate sanitation. Furthermore, in the U.S., screenings for the mother and fetus for genetic diseases are available; however these resources are limited in Nicaragua, and not even available in Las Salinas.

Many unaccounted factors have interfered with the ability to make concrete conclusions about the efficacy and cost effectiveness of standard prenatal care in Nicaragua and the U.S. relative to one another. For example, the data collection in Nicaragua was completed primarily in Las Salinas, a very small and rural town not representative of all of Nicaragua. The differences in access to healthcare were another important factor. First, unlike the United States, the healthcare provided at the Nicaraguan government health posts are covered by government subsidies. Theoretically, this allows all pregnant mothers prenatal care, regardless of family income. However, transportation to these government clinics is another issue. While there is a public transportation system in the bigger cities, many patients are hindered by the limited transportation options. Therefore, though the standard of care recommends 6 appointments, the significant inconvenience of getting to the clinic reduced the actual number of visits for many women. Furthermore, the clinic did not have a phone and many patients also did not have phones. If the patient needed to contact the doctor or the nurse, they needed to find them in person or have their personal cell phone numbers.

References:

[1] "Maternal mortality ratio (modeled estimate, per 100,000 live births) | Data | Table." *Data | The World Bank*. N.p., n.d. Web. 22 Feb. 2013. <http://data.worldbank.org/indicator/SH.ST

[2] "Mortality rate, neonatal (per 1,000 live births) | Data | Table." *Data | The World Bank*. N.p., n.d. Web. 22 Feb. 2013. <http://data.worldbank.org/indicator/SH.DYN